

In the claims:

Please amend the claims as follows:

1. (Currently amended) A wavelength selecting module for selecting a light signal having a specific wavelength from a plurality of light signals having different center wavelengths, the plurality of light signals being provided as diverging light, the module comprising:

a first collimator for collimating the diverging light to generate a collimated light beam;

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a liquid crystal cell having a predetermined helical direction, wherein the liquid crystal cell separates a light signal having a specific wavelength among the plurality of light signals of the collimated light beam into a left circularly polarized light and a right circularly polarized light, reflects one of the left and right circularly polarized light signals that has a same optical rotatory direction as the predetermined helical direction toward the first collimator in a first state, and passes the plurality of light signals of the collimated light beam in a second state, and wherein the liquid crystal cell changes between the first state and the second state in accordance with a change in physical energy applied thereto; and

a first wave plate, located between the liquid crystal cell and the first collimator, for converting the plurality of light signals of the collimated light beam to a plurality of circularly polarized light signals having a same optical rotatory direction as the predetermined helical direction of the liquid crystal.

2. (Original) The wavelength selecting module according to claim 1, wherein the liquid crystal cell includes:

a liquid crystal having a pair of surfaces; and

a pair translucent electrodes which are provided on the pair of surfaces and to which a voltage as the physical energy is applied.

3. (Original) The wavelength selecting module according to claim 1, wherein the liquid crystal is one of a cholesteric liquid crystal and a chiral nematic liquid crystal.

4. (Original) The wavelength selecting module according to claim 1, wherein the collimator includes:

a collimator lens for collimating the diverging light to generate the collimated light beam and converging an optically selected light signal having the specific wavelength reflected by the liquid crystal cell;

a first optical fiber for guiding the plurality of light signals to emit the diverging light to the collimator lens; and

a second optical fiber for transmitting the optically selected light signal.

5. (Original) The wavelength selecting module according to claim 1, further comprising a second collimator for receiving a transmission light beam which pass the liquid crystal cell and conversing the transmission light beam.

6. (Original) The wavelength selecting module according to claim 5, wherein the second collimator includes:

a collimator for conversing the transmission light beam; and

an optical fiber for transmitting the transmission light beam.

7. (Original) The wavelength selecting module according to claim 1, wherein the first collimator includes a first collimator unit for causing the collimated light beam to obliquely enter the liquid crystal cell; and

a second collimator unit for conversing an optically selected light signal having a specific wavelength reflected by the liquid crystal cell.

8. (Original) The wavelength selecting module according to claim 5, further comprising a second collimator for conversing a transmission light beam obliquely emitted from the liquid crystal cell.

9. (Cancelled)

10. (Currently amended) The wavelength selecting module according to ~~claim 9~~

claim 1, further comprising a second wave plate, arranged opposite to where the first wave plate is provided and facing the liquid crystal cell, for returning the plurality of circularly polarized light signals which have passed the liquid crystal cell to a plurality of non-polarized light signals.

11. (Currently amended) A wavelength selecting apparatus for selecting at least one light signal from a plurality of light signals having different center wavelengths, the plurality of light signals being provided as diverging light, the apparatus comprising:

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a plurality of wavelength selecting modules positioned in sequence, one wavelength selecting module receiving the plurality of light signals, the remaining wavelength selecting modules each receiving one or more light signals that passed a previous wavelength selecting module; and

a plurality of optical fibers for optically connecting the plurality of wavelength selecting modules, wherein each wavelength selecting module includes[[,]]

a first collimator for collimating the diverging light to generate a collimated light beam, and

a liquid crystal cell having a predetermined helical direction and receiving the plurality of light signals of the collimated light beam from the first collimator,

wherein the liquid crystal cell separates a light signal having an associated wavelength among the plurality of light signals of the collimated light beam into a left circularly polarized light and a right circularly polarized light, reflects one of the left and right circularly polarized light signals that has a same optical rotatory direction as the predetermined helical direction toward the first collimator in a first state, passes the plurality of light signals of the collimated light beam in a second state, and wherein the liquid crystal cell changes between the first state and the second state in accordance with a change in physical energy applied thereto.

12. (Original) The wavelength selecting apparatus according to claim 11, wherein at least one liquid crystal cell enters the first state by individually changing voltages as physical energy supplied to the liquid crystal cells of the wavelength selecting modules.

13. (Original) The wavelength selecting apparatus according to claim 11, wherein each wavelength selecting module further includes:

a first wave plate, located between the liquid crystal cell and the first collimator, for converting the plurality of light signals of the collimated light beam to a plurality of circularly polarized light signals having a same optical rotatory direction as the predetermined helical direction of the liquid crystal; and

a second wave plate, arranged opposite to where the first wave plate is provided and facing the liquid crystal cell, for returning the plurality of circularly polarized light signals which have passed the liquid crystal cell to a plurality of non-polarized light signals.

14. (Original) A wavelength selecting apparatus for selecting at least one light signal from a plurality of light signals having different center wavelengths, the plurality of light signals being provided as diverging light, the apparatus comprising:

a first collimator for collimating the diverging light to generate a collimated light beam; and

a liquid crystal cell unit for receiving the plurality of light signals of the collimated light beam from the first collimator and reflecting at least one light signal toward the first collimator, wherein the liquid crystal cell unit includes a plurality of stacked liquid crystal cells and

wherein each liquid crystal cell includes:

a liquid crystal which has a pair of surfaces and a predetermined helical direction, wherein the liquid crystal separates a light signal having an associated wavelength among the plurality of light signals of the collimated light beam into a left circularly polarized light and a right circularly polarized light, reflects one of the left and right circularly polarized light signals that has a same optical rotatory direction as the predetermined helical direction toward the first collimator in a first state, passes the plurality of light signals of the collimated light beam in a second state, and wherein the liquid crystal changes between the first state and the second state in accordance with a change of a voltage applied thereto, and

a pair of transparent electrodes which is provided on the pair of surfaces of the liquid crystal and to which the voltage is applied, wherein at least one liquid crystal enters the first state by individually changing voltages applied to the liquid crystals via the pairs of

transparent electrodes.

15. (Original) The wavelength selecting apparatus according to claim 14, further comprising:

a first wave plate, located between the liquid crystal cell unit and the first collimator, for converting the plurality of light signals of the diverging light beam to a plurality of circularly polarized light signals having a same optical rotatory direction as the predetermined helical direction of the liquid crystal; and

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a second wave plate, arranged opposite to where the first wave plate is provided and facing the liquid crystal cell, for returning the plurality of circularly polarized light signals which have passed the liquid crystal cell to a plurality of non-polarized light signals.

16. (Original) The wavelength selecting apparatus according to claim 14, wherein the first collimator includes:

a collimator lens for collimating the diverging light signal to generate the collimated light beam and conversing an optically selected light signal having a specific wavelength reflected by the liquid crystal cell, and

an optical fiber for guiding the plurality of light signals and the optical selection signal;

and

the wavelength selecting apparatus further comprises an optical circulator having a first terminal connected to the optical fiber, a second terminal for receiving the diverging light and a third terminal for outputting the optically selected light signal.

17. (Original) The wavelength selecting apparatus according to claim 14, further comprising a second collimator for receiving a transmission light beam which pass the liquid crystal cell unit and conversing the transmission light beam.

18. (New) An apparatus comprising:

a first wave plate to receive linearly polarized light signals and generate circularly polarized light signals, the light signals having different center wavelengths; and

a first liquid crystal cell to receive the circularly polarized light signals, the first liquid crystal cell switching between a first state and a second state in response to application of different physical energy levels,

wherein in the first state, the first liquid crystal cell reflects a circularly polarized light signal having a first center wavelength and a first polarization,

wherein in the second state, the first liquid crystal cell passes substantially all of the circularly polarized light signals.

19. (New) The apparatus of claim 18 in which the first liquid crystal cell comprises one of a cholesteric liquid crystal and a chiral nematic liquid crystal.

20. (New) The apparatus of claim 18, further comprising a second wave plate to receive the circularly polarized light signals that passed the first liquid crystal cell and generate linearly polarized light signals.

21. (New) The apparatus of claim 20, further comprising a third wave plate to receive linearly polarized light signals that passed the second wave plate and generate circularly polarized light signals; and a second liquid crystal cell to receive the circularly polarized light signals from the third wave plate, the first liquid crystal cell switching between a first state and a second state in response to application of different physical energy levels, wherein in the first state, the second liquid crystal cell reflects a circularly polarized light signal having a second center wavelength and a first polarization, wherein in the second state, the second liquid crystal cell passes substantially all of the circularly polarized light signals.

22. (New) The apparatus of claim 18, further comprising a collimator to receive the linearly polarized light signals, generate collimated light signals, and direct the collimated light signals obliquely toward the first wave plate.

23. (New) A method comprising:
passing linearly polarized light signals through a first wave plate to generate circularly polarized light signals, the light signals having different center wavelengths; and

directing the circularly polarized light signals toward a first liquid crystal cell that switches between a first state and a second state in response to application of different physical energy levels,

wherein in the first state, the first liquid crystal cell reflects a circularly polarized light signal having a first center wavelength,

wherein in the second state, the first liquid crystal cell passes substantially all of the circularly polarized light signals.

24. (New) The method of claim 23, further comprising directing the circularly polarized light signals that passed the first liquid crystal cell toward a second liquid crystal that switches between a first state and a second state in response to application of different physical energy levels,

wherein in the first state, the second liquid crystal cell reflects a circularly polarized light signal having a second center wavelength,

wherein in the second state, the second liquid crystal cell passes substantially all of the circularly polarized light signals received by the second liquid crystal cell.

25. (New) The method of claim 23, further comprising directing the linearly polarized light signals obliquely toward the first wave plate.

26. (New) The method of claim 23, further comprising directing the circularly polarized light signals that passed the first liquid crystal cell through a second waveplate to generate linearly polarized light signals.

27. (New) The method of claim 23, further comprising passing the portion of the circularly polarized light signals reflected by the first liquid crystal cell through the first waveplate to generate a linearly polarized light signal having the first center wavelength.
